

CLAIMS

1. A method of imaging atherosclerotic plaques in a host comprising:
 - 2 introducing a diagnostically effective amount of detectably labeled
 - 4 human or humanized Mab or fragment thereof, Fab, scFv, or small molecule
 - 6 analog into the host vasculature, said antibody being specific for oxidation
 - 8 specific epitopes present in the core of atherosclerotic plaques, and binding
 - 10 to such epitopes *in vivo* at a detectably higher rate than the rate of binding to
 - 12 normal vasculature; and
 - 14 determining whether the antibody binds to the vasculature, wherein the
 - 16 binding of said antibody to the vasculature is indicative of the presence of
 - 18 atherosclerotic plaques and the binding of said antibody to the vascular tissue
 - 20 is indicative of pathogenic, unstable plaques.
2. A method as in Claim 1 wherein the detectably labeled Fab is IK17.
3. A method as in Claim 1 wherein the detectably labeled scFv is IK17.
4. A method as in Claim 1 wherein the size of the atherosclerotic plaque
detected in the cardiovascular tissue is estimated as a correlate of the
percent of the injected dose of detectably labeled antibody to another site in
the body that does not contain atherosclerotic plaques.
5. A method as in Claim 1 wherein the imaging method is used as a means
to monitor the progression or regression of atherosclerotic disease.
6. A method as in Claim 1 wherein the imaging method is used as a
prognostic indicator of the relative pathology of an atherosclerotic plaque.
7. A method as in Claim 1, wherein the antigen or related epitope of the
detectably labeled antibody is administered to the host to reduce residual
label in the blood after introduction of the detectably labeled antibody into the

host.

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8. A method as in Claim 1, wherein the detectable label is selected from the
34 group comprising of radioisotopes, paramagnetic labels, echogenic
liposomes, biotin, and fluorescence.

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9. A method as in Claim 1, wherein the detection method is selected from the
38 group comprising MRI, CAT scan, PET scan, electron beam CT scan, SPECT
imaging, gamma imaging, angiography, intravascular ultrasound, and
40 intravascular radioactive and fluorescent detection.

42 10. A method of assaying for the presence of indicators of atherosclerosis in
a host comprising assaying the serum of the patient for binding to a human
44 or humanized Mab or fragment thereof, Fab, or scFv wherein the antibody is
specific for oxidation specific epitopes present in atherosclerotic plaques.

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11. A method as in Claim 10 wherein the presence of factors in serum is
48 determined by an ability to compete for the binding of the antibody to its
antigen using an ELISA type assay wherein inhibition of the binding of the
50 antibody to its antigen indicates the presence of atherosclerotic indicators in
the serum.

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12. A method as in claim 10 wherein the total population of HDL or LDL in
54 serum are probed with the antibody in an ELISA type assay wherein binding
of the antibody indicates the presence of atherosclerotic indicators in the
56 serum.

58 13. A method as in Claim 10 wherein the Fab is IK17.

60 14. A method as in Claim 10 wherein the scFv is IK17.

62 15. A method of improving the delivery of therapeutic agents to the site of

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atherosclerotic lesions comprising linking therapeutic agents to human or
64 humanized Mab or fragment thereof, Fab, ScFv, or small molecules wherein
the antibody is specific for oxidation specific epitopes present in the core of
66 atherosclerotic plaques.

68 16. A method as in Claim 15 wherein the Fab is IK17.

70 17. A method as in Claim 15 wherein the scFv is IK17.

72 18. A method as in Claim 15 wherein the therapeutic agent is delivered for
the purpose of photodynamic therapy.

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19. A method of creating novel therapeutic agents which comprises agents
76 that block the uptake of OxLDL by macrophages by masking epitopes
recognized by IK17.

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20. A method as in Claim 19 wherein the therapeutic agent is the antibody,
80 Fab or scFv itself wherein:
the antibody is expressed recombinantly and administered to the host
82 the antibody is expressed by the host from a gene therapy vector
comprising the coding region of the Fab or scFv

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21. A method as in Claim 19 wherein the therapeutic agent is a small
86 molecule that mimics the interaction of IK17 with oxidized epitopes to prevent
their uptake by macrophages.

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22. A method for the modification of IK17 comprising the modification of the
90 coding sequences for the light and heavy chains of the antibody or the
addition of flanking sequences.

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23. A method in as in Claim 22 comprising creating a site or linker for
94 modification with imaging or therapeutic reagents on IK17.

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24. A method as in Claim 22 comprising modifying the pharmacodynamic or
96 pharmacokinetic properties of IK17 comprising altered stability, increased
plasma elimination for reduction of background staining, and increased tissue
98 uptake.

100 25. A method as in Claim 22 comprising the modification of IK17 to alter the
binding specificity of the Fab or scFv.

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26. An antibody containing the light and heavy chains comprised of the
104 nucleotide sequences in the Appendix A attached hereto.